

Concurrent Session 15: Metabolism

The effect of metformin or lifestyle intervention on obesity in young women

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Background – Young women are at high risk of weight gain. Metformin has been shown to reduce body weight in older adults and in adolescents, but its effect in overweight or obese young women is unclear.

Objective – This study aimed to determine the effects of metformin on body weight, body composition and metabolic profile in young women, compared to placebo and comprehensive lifestyle intervention.

Design – A total of 206 young women (BMI, 33.22 ± 4.86 kg/m², age 27.72 ± 4.66 years) received treatment after randomisation to 1500mg/day of metformin (M), placebo (P), or comprehensive lifestyle intervention including structured diet, exercise and behavioural therapy (L) for 12-weeks. Variables were assessed using random effects mixed models and chi-square analysis. Data presented as mean \pm sd.

Outcomes – Attrition rate was 51% for L, 36% for M and 30% for P groups ($P > 0.05$). Total energy intake decreased by 3251 ± 2441 KJ in the L group, 1515 ± 2805 KJ in the M group, and 1263 ± 2344 KJ in the P group ($P < 0.05$). Physical activity increased in all groups without group differences (631.38 ± 1944 met-min/week). The L group had greater weight loss (-4.88 ± 3.31 kg) compared to M (-1.10 ± 2.30 kg) and P groups (-0.38 ± 2.68 kg) ($P < 0.0001$). Intention-to-treat analysis showed that 10% (8/80) of the subjects in the P group had gained weight ($>3\%$ throughout the 12-weeks study period), compared to 3.1% (2/65) from the M group and none (0/61) from the L group ($P < 0.001$). The L group also had the greatest decrease in waist circumference (-5.19 ± 4.00 cm), fat mass (-5.35 ± 3.28 kg) ($P < 0.05$) compared to M and P groups. There was a significantly greater decrease in fasting insulin levels (-1.87 ± 3.95 mU/L) and HOMA levels (-0.39 ± 0.88) in the L group compared to the P group ($P < 0.01$).

Conclusion – In young women, metformin does not appear effective relative to placebo for weight or fat loss but may be effective in short term weight gain prevention. Structured lifestyle advice was more effective than general lifestyle advice presented with metformin or placebo in improving body weight and metabolic outcomes in young women.

Food groups as predictors of abdominal fat in females

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Background – Increased abdominal fat is associated with cardiovascular risk, but the influence of different foods on abdominal fat is not clear.

Objective – To examine the association between food group intake and percent abdominal fat in women.

Design – A cross-sectional study was conducted in 262 younger women (YW, aged 18-40 y) and 200 older women (OW, aged 41-68 y) who were twins and sisters involved in bone health studies. Food group intake was estimated from one four-day food record. Dual energy X-ray absorptiometry (DEXA) was used to estimate the percent abdominal fat (%AF). Generalised linear modelling (GenMod) was performed to identify the associations between predictor and outcome variables, adjusting for twin/sister clustering, age, energy intake, lifetime cigarette smoking and current physical activity level.

Outcomes – The % AF was 22.6% (95% CI, 21.2 - 23.9) in YW compared to OW 29.8% (28.3 - 31.3) ($P < 0.0001$). In YW a higher intake of breads/cereals ($\beta = 0.004$ (se 0.002)) and meat ($\beta = 0.008$ (0.003)) was positively associated with %AF. However there was no association of lean red meat (% lean or 100 minus % fat) to % AF ($\beta = -0.12$ (0.007)). Using GenMod, OW who drank alcoholic beverages (60%) had 1.7% (0.4) ($P = 0.0001$) greater %AF than those who did not drink. In OW a higher intake of fruit, vegetables and pulses combined ($\beta = -0.003$ (se 0.001)) was associated with lower % AF, but intake of red meat, regardless of the fat content, was not associated with %AF ($\beta = 0.0003$ (0.004), $P = 0.33$).

Conclusion – Consumption of lean red meat was not related to %AF. In OW central adiposity was minimised through consumption of fruits, vegetables and pulses, whereas it increased with alcohol intake. These results confirm the current dietary recommendations to increase fruits and vegetables, include protein sources such as lean red meat, and reduce alcohol intake to minimise deposition of abdominal fat.

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